भारतीय मानक
Indian Standard

IS 2095 (Part 2) : 2022

जिप्सम के प्लास्टर बोर्ड — विशिष्टि

भाग 2 लेपित/परत चढ़े हुए जिप्सम के प्लास्टर बोर्ड

(तीसरा पुनरीक्षण)

Gypsum Plaster Boards — Specification

Part 2 Coated/Laminated Gypsum Plaster Boards

(Third Revision)

ICS 91.100.10

© BIS 2022

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

October 2022 **Price Group 4**

Building Limes and Gypsum Products Sectional Committee, CED 04

FOREWORD

This Indian Standard (Part 2) (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Building Lime and Gypsum Products Sectional Committee had been approved by the Civil Engineering Division Council.

The internal surfaces of walls and ceilings of most of the buildings are finished internally by applying plaster in one or more coats. In order to reduce the demand of site labour the use of building boards, as covering for walls and ceiling is increasing steadily. Gypsum plaster boards have the specific advantage of being lighter than the boards of similar nature, such as fibre hard boards and asbestos cement building boards. Gypsum plaster boards also possess better fire resistance, thermal and sound insulation properties.

Sufficient quantities of natural gypsum and by-product gypsum are available in India. Though natural gypsum has been mostly used in the manufacture of gypsum plaster boards, by-product gypsum after suitable treatment, if required, is also equally suitable for manufacturing such boards.

In the standard gypsum plaster board have been covered in three parts, as follows:

Part 1 Plain gypsum plaster boards.

Part 2 Coated/laminated gypsum plaster boards.

Part 3 Reinforced gypsum plaster boards and ceiling tiles.

The plain gypsum plaster board is made with paper lining where lining is an integral part of the board. In coated/laminated gypsum plaster board, the board is coated/laminated with laminate such as wood veneer, plastic film, paper, etc. The reinforced gypsum plaster boards (and ceiling tiles) are made using considerable amount of fibres, such as sisal, coconut, jute or glass fibres, without any paper lining or coating/lamination.

The boards may be used to provide dry lining finishes to masonry walls, to ceilings, to steel or timber framed partitions, or as claddings to structural steel columns and beams, or in the manufacture of prefabricated partition panels. Laminated gypsum plaster boards are used for laying concrete ceiling. With concrete it combines firmly and represents readymade interior plastering. Glass reinforced gypsum plaster boards (GRG) are pseudo-ductile materials having reasonably high flexural breaking load and impact resistance. GRG can be sawn, drilled, screwed or nailed like timber. It is non-combustible. Being isotropic in character, thin GRG panels may be used as compared to timber panels. GRG composite can be used for panel door, wall panelling, partitions, false ceiling, etc. and also as furniture components.

The gypsum plaster boards may be fixed by screwing, or sticking with gypsum based adhesive plaster directly on structure to avoid plastering work or two boards together with other chemical adhesives for increased sound insulation. They may also be inserted in lay-in grids and/or secured by clips.

This standard was first published in 1964 and subsequently revised in 1982 and in 1996. This standard (Part 2) was first brought out as a separate part in 1996 and subsequently revised in 2001. In this revision, the following major modifications have been incorporated:

a) New test for density and fire resistance have been introduced,

b) Marking clause has been made comprehensive, and

c) References to various Indian Standards have been update.

A scheme for labeling environment friendly products known as ECO Mark is also included. The ECO Mark would be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 21 February 1991 and No. 425 dated 28 October 1992 published in the Gazette of the Government of India. For a product to be eligible for marking with ECO logo, it shall also carry the ISI Mark of BIS besides meeting additional optional environment friendly requirements. For this purpose, the Standard Mark of BIS would be a single mark being a combination of the ISI Mark and the ECO logo. Requirements to be satisfied for a product to qualify for the BIS Standard Mark for ECO friendliness will be optional; manufacturing units will be free to opt for the ISI Mark alone also.

The composition of the Committee responsible for the formulation of this standard is given at Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

GYPSUM PLASTER BOARDS — SPECIFICATION

PART 2 COATED/LAMINATED GYPSUM PLASTER BOARDS

(Third Revision)

1 SCOPE

This standard (Part 2) lays down the requirements for coated/laminated gypsum plaster boards intended to be used for drywall (partition), ceiling and wall lining, and panelling in buildings.

2 REFERENCES

The Indian Standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards given below:

IS No.	*Title*
IS/ISO 834 (Part 8) : 2000	Fire-resistance tests elements of building construction: Part 8 Specific requirements for non-load bearing vertical separating elements
1288 : 1982	Methods of test for mineral gypsum (*second revision*)
2095 (Part 1) : 2022	Gypsum plaster boards — Specification: Part 1 Plain gypsum plaster boards (*fourth revision*)
(Part 3) : 2022	Part 3 Reinforced gypsum plaster boards and ceiling tiles (*fourth revision*)
2469 : 1976	Glossary of terms relating to gypsum (*first revision*)
2720 (Part 26) : 1987	Method of test for soils: Part 26 determination of *p*H value (*second revision*)
4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (*first revision*)
8272 : 1984	Specification for gypsum plaster for use in the manufacture of fibrous plaster boards (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2469 and the following shall apply.

3.1 Gypsum Fibre Board — A composition of gypsum plaster and waste paper fibre forming body of regular dimensions.

3.2 Laminated/Coated Gypsum Board — Gypsum boards based on material conforming to IS 2095 (Part 1) or IS 2095 (Part 3) or IS 8272 intimately bonded with wood vineers, plastic films, paper, etc.

4 MATERIALS

4.1 Gypsum Plaster

Gypsum (natural gypsum or by-product gypsum) used for the manufacture of gypsum plaster board shall comply with the requirements given in Table 1.

Table 1 Requirements of Gypsum

(*Clause* 4.1)

Sl No.	Characteristics	Requirement	Method of Test, Ref to
(1)	(2)	(4)	(3)
i)	$CaS0_4 \cdot 2H_2O$, *Min*	70 percent	IS 1288
ii)	Free water, *percent*		
	a) Natural (mineral) gypsum	5 percent	IS 1288
	b) By-product gypsum	13 percent	
iii)	*p*H		
	a) Natural (mineral) gypsum	6-8	IS 2720 (Part 26)
	b) By-product gypsum	5-9	
iv)	SiO_2, *Max*	8 percent	IS 1288
v)	Chloride content, *Max*	500 ppm	IS 8272

NOTE — In place of above methods, use of XRF may the resorted. However, in case of any conflict, the above methods shall be treated as referee method.

4.2 Fibres

The reinforcing fibre may be cellulosic fibre produced out of waste paper like newspaper, magazines, old card boards and corrugated cartons containing cellulose.

4.3 Additives

Suitable additives like glass fibres, silicon oil and other ingredients may be added as appropriate to achieve the specific performance/quality requirement of the end product.

4.4 Laminating/Coating Material

Wood vineers, plastic films, paper, etc should be used for lamination/coating on gypsum plaster board.

5 MANUFACTURING

In these boards, the cellulosic fibres produced from the waste paper are intimately blended/embedded in the gypsum mass. The waste paper is processed in the fibre mills to form cellulosic fibres. The gypsum plaster and the cellulosic fibres are fed into a mixer to form uniformally blended mass. The mixture of gypsum plaster and the fibres are transported to a spreading unit wherein the mixture is evenly spread over a perforated belt or moulds and humidified. A continuous or hand press may be used to press the gypsum fibre mix to form gypsum fibre boards. After setting, the boards are demoulded and dried. For smooth demoulding oil or grease may be used.

The board is moistened with a bonding agent for surface treatment and retarded water absorption and anti-dust properties are realized. This corresponds to a prime coating effected in the factory for a painting or lamination/papering. The board is now finished and can be packed and stacked.

6 REQUIREMENTS

6.1 Dimensions and Tolerances

6.1.1 The dimensions of the gypsum plaster board shall be as given in Table 2.

Table 2 Dimensions of Gypsum Plaster Board

(*Clause* 6.1.1)

Sl No.	Parameter	Requirement mm	Tolerance mm
(1)	(2)	(3)	(4)
i)	Width	600/1 220	+ 0 −5
ii)	Length	1 800 to 3 600	+ 0 −6
iii)	Thickness	9.5 /12.5/15	± 0.5

NOTE — Gypsum plaster boards with other dimension may be manufactured subject to mutual agreement between the purchaser and the manufacturer, however same tolerance shall be applicable.

6.1.2 *Tolerance on Shape*

6.1.2.1 *Tolerance on straightness of edge*

The maximum tolerance on the straightness of the edge shall be 3 mm per metre, when tested in accordance with Annex A of IS 2095 (Part 1).

6.1.2.2 *Tolerance on squareness of edge*

The maximum tolerance on squareness of the edge shall be 2.5 mm per metre, when tested in accordance with Annex A of IS 2095 (Part 1).

6.1.3 *Edge and End Profiles*

The edge and end profile of gypsum board shall be square.

6.2 Density

The gypsum board when tested for density as per Annex C of IS 2095 (Part 1), shall not be less than 1 150 kg/m^3.

6.3 Flexural Breaking Load

The minimum flexural breaking load when tested in accordance with Annex D of IS 2095 (Part 1), shall be as per Table 3.

Table 3 Minimum Flexural Breaking Load

(*Clause* 6.3)

Sl No.	Thickness mm	Flexural Breaking Load Transverse Direction N	Flexural Breaking Load Longitudinal Direction N
(1)	(2)	(3)	(4)
i)	9.5	150	400
ii)	12.5	200	450
iii)	15	225	500
iv)	Other Thickness	14.4 × thickness in mm	40 × thickness in mm

6.4 Fire Resistance

The gypsum board when tested for fire resistance as per IS/ISO 834 (Part 8), shall have minimum fire resistance of 60 min.

The specimen for fire resistance test shall be made of minimum one gypsum plaster board screw fixed (max 300 mm c/c) on both sides of a metal frame. The frame is supported by vertical and horizontal stiffeners centrally, if no joint is provided. Horizontal and vertical stiffeners shall be provided in all joints, if required.

This test shall be carried out on the gypsum board only when there is any change in composition of the gypsum board.

6.5 Finish

The surface of the boards shall be true and free from imperfection that would render the board unfit for use.

7 SAMPLING AND CRITERIA FOR CONFORMITY

7.1 Scale of Sampling

7.1.1 *Lot*

In any consignment, all the gypsum plaster boards of the same size, manufactured from the same set of materials, under similar condition of production shall be grouped together to constitute a lot.

7.1.2 The gypsum board shall be selected from the lot at random, in order to ensure the randomness of selection, the procedure given in IS 4905 may be followed. The numbers of gypsum boards to be selected from the lot depends upon the lot size and shall be in accordance with Table 4.

Table 4 Sampling of Gypsum Plaster Board

(*Clauses* 7.1.2 *and* 7.2.2)

Sl No.	**Lot Size (no's)**	**Sample Size for Dimensional Requirements**	**Acceptance Number**	**Sample Size for Other Tests**
(1)	(2)	(3)	(4)	(5)
i)	Up to 500	5	0	2
ii)	501 to 1 000	8	0	3
iii)	1 001 to 3 000	13	1	5
iv)	3 001 and above	20	1	8

7.2 Number of Tests and Criteria for Conformity

7.2.1 Each gypsum plaster board selected in accordance with col 2 and col 3 of Table 4 shall be subjected to the tests for the dimensional and finish requirements. Any board failing to meet one or more of the requirement shall be considered as defective. If the number of gypsum board found defective is less than or equal to the corresponding acceptance number given in col 4, the lot shall be considered as conforming to the dimension requirements.

7.2.2 The lot which has been found as conforming to the dimensional requirement shall then be subjected to density, flexural breaking load and fire resistance tests. For this purpose, the number of gypsum board to be selected shall be in accordance with col 2 and col 5 of above table. The lot shall be considered as conforming to these requirements if no defective is found.

7.2.3 The lot shall be considered as conforming to the requirements of the specification if **7.2.1** and **7.2.2** are satisfied.

8 REQUIREMENTS FOR ECO MARK

8.1 General Requirement

8.1.1 The product shall conform to the requirements of quality and performance as specified in the standard.

8.1.2 The manufacturer shall produce to the Bureau of Indian Standards, environmental consent clearance from the concerned State Pollution Control Board as per the provisions of the *water* (*Prevention and Control of Pollution*) *Act*, 1974 and *Air* (*Prevention and Control of Pollution*) *Act*, 1981 along with the authorization, if required under the *Environment* (*Protection*) *Act*, 1986, while applying for ECO Mark.

8.1.3 The product or product packaging may display in brief the criteria based on which the product has been labelled environment friendly.

8.1.4 The material used for product packing shall be recyclable, reusable or biodegradable.

8.2 Specific Requirements

For ECO Marking, gypsum plaster boards shall be manufactured using by-product gypsum.

NOTE — The manufacturer shall provide documentary evidence by way of certificate or declaration to this effect to Bureau of Indian Standards while applying for ECO Mark.

9 PACKING AND MARKING

9.1 The gypsum board shall be transported so as to be kept dry, free from moisture and any kind of damage.

9.2 The gypsum board shall be packed in such packages which are made from recyclable, reusable or biodegradable materials as declared by the manufacturer and may be accompanied with detailed instructions for proper use.

9.3 Each gypsum board shall be legibly and indelibly marked with the following information:

a) Manufacturer's name or trade-mark, if any;
b) Size;
c) Batch number and date of manufacture; and
d) The criteria for which product has been labelled an ECO Mark, if applicable and the list of identified critical ingredients in descending orders of quantity, percent by mass.

10 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Building Lime and Gypsum Products Sectional Committee, CED 04

Organizations	*Representative(s)*
School of Planning and Architecture, New Delhi	Shrimati Anuradha Chaturvedi (***Chairperson***)
AIMIL Ltd, New Delhi	Shri Rohitash Barua Shri K. K. V. Yasas (*Alternate*)
Archaeological Survey of India, New Delhi	Shri R. S. Jamwal
Building Materials and Technology Promotion Council, New Delhi	Shri C. N. Jha
Central Public Works Department, New Delhi	Shri M. K. Mallick Shri Divakar Agrawal (*Alternate*)
Central Soil and Materials Research Station, New Delhi	Shri U. S. Vidyarthi Ms Beena Anand (*Alternate*)
CSIR-Central Building Research Institute, Roorkee	Shri Soumitre Maiti
CSIR-Central Road Research Institute, New Delhi	Dr P. S. Prasad Shri J. B. Sengupta (*Alternate*)
Delhi Development Authority, New Delhi	Shri U. C. Chankkar Shri Devendar Singh (*Alternate*)
Diamond International Inex Pvt Limited, Gurugram	Shri B. B. Puri Shri Raman Mehta (*Alternate*)
Directorate of Mines and Geology, Udaipur	Shri S. G. Bohra Shri N. M. Pitliya (*Alternate*)
Dyerstone Lime Co (P) Ltd, Delhi	Shri N. Macedo
Eshan Minerals Pvt Ltd, Jalgaon	Shri R. K. Vishambharnath Agrawal Shri Eshan Agrawal (*Alternate*)
Department of Science and Technology, Ministry of Science and Technology, New Delhi	Representative
Geological Survey of India, Kolkata	Director (Engg Geology Div)
Gujarat Engineering Research Institute, Vadodara	Shri P. B. Chaudhary Shri R. J. Soni (*Alternate*)
Housing and Urban Development Corporation Ltd, New Delhi	Shri Samir Mitra Shri Rajesh Sharma (*Alternate*)
Hindalco Industries Limited, Mumbai	Shri Muralidhar Potnuru Shri Pappu Lal Dhobi (*Alternate*)
Indian Buildings Congress, New Delhi	Representative
Indian Institute of Technology Madras, Chennai	Dr Mehar Prasad Dr Devdas Menon (*Alternate*)
Indian National Trust for Art and Culture Heritage, New Delhi	Shri Divay Gupta Shri A. Vijiya (*Alternate*)
Indian Roads Congress, New Delhi	Shri S. K. Nirmal Shri R. V. Patil (*Alternate*)
Institute for Solid Waste Research and Ecological Balance, Vishakhapatnam	Dr N. Bhanumathidas Shri N. Kalidas (*Alternate*)
Khadi & Village Industries Commission, Delhi	Director

Organizations	*Representative(s)*
Lime Manufacturers Association of India, New Delhi	Shri Vidya P. Agarwal Shri Pranjal Jauhar (*Alternate*)
Military Engineer Services, Engineer-in-Chief's Branch, Integrated HQ of MoD (Army), New Delhi	Shrimati Rivoo Mahendru Shri S. K. Mishra (*Alternate*)
National Council for Cement and Building Materials, Ballabgarh	Dr Pinky Pandey Shri S. K. Agarwal (*Alternate*)
National Institute of Technology, Warangal	Dr P. Rathish Kumar Prof G. Rajesh Kumar (*Alternate*)
National Test House, Kolkata	Shri D. V. S. Prasad Shri S. Thirumalai Kolundu (*Alternate*)
NTPC Ltd, Noida	Dr M. Malik Shri P. D. Hirani (*Alternate*)
Public Works Department, New Delhi	Shri Manu Amitabh Shri S. K. Aggarwal (*Alternate*)
Public Works Department, Govt of Rajasthan, Jaipur	Shri B. P. Chauhan Shri S. L. Mahipal (*Alternate*)
Rajasthan State Mines & Mineral Ltd, Bikaner	Shri C. L. Jain Shri D. K. Aggarwal (*Alternate*)
Rashtriya Chemicals and Fertilizers Ltd, Mumbai	Shri V. K. Agrawal Shri S. B. Sahane (*Alternate*)
Research Designs Standardization Organization, Lucknow	Executive Director (Works) Shri Ashutosh Kumar (*Alternate*)
Saint-Gobain Gyproc India Limited, Mumbai	Shri Girish Dash Shri Prashant Patil (*Alternate*)
Shriram Institute for Industrial Research, Delhi	Dr Mukesh Garg Shri Rahul (*Alternate*)
The Indian Institute of Architects, Mumbai	Shri Jatinder Saigal Shri Jit Kumar Gupta (*Alternate*)
The Institution of Engineers (India), Kolkata	Representative
Ultratech Cement Ltd, Mumbai	Shri A. K. Tiwari Shri Rahul Goel (*Alternate*)
USG Boral Building Products Pvt Ltd, Noida	Shri K. K. Sirpal Shri Ramesh N. Komakulwar (*Alternate*)
In Personal Capacity (*163 C, Express View Apartment, Sector 93, Noida 201304*)	Shri J. K. Prasad
In Personal Capacity (*H.NO. 1050, 8, Civil Lines, Roorkee 247667*)	Dr A. K. Minocha
BIS Director General	Shri Sanjay Pant, Scientist 'F' and Head (Civil Engineering) [Representing Director General (*Ex-officio*)]

Member Secretaries

Dr Manoj Kumar Rajak
Scientist 'D' (Civil Engineering), BIS

and

Shri Durgesh Kumar Patel
Scientist 'B' (Civil Engineering), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Head (Publication & Sales), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: CED 04 (15426).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: 601/A, Konnectus Tower-1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	2323 7617
Eastern	: 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	2367 0012 2320 9474
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg Chandigarh 160019	265 9930
Southern	: C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113	2254 1442 2254 1216
Western	: Plot No. E-9, Road No.-8, MIDC, Andheri (East), Mumbai 400093	2821 8093

Branches : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. CHANDIGARH. CHENNAI. COIMBATORE. DEHRADUN. DELHI. FARIDABAD. GHAZIABAD. GUWAHATI. HIMACHAL PRADESH. HUBLI. HYDERABAD. JAIPUR. JAMMU & KASHMIR. JAMSHEDPUR. KOCHI. KOLKATA. LUCKNOW. MADURAI. MUMBAI. NAGPUR. NOIDA. PANIPAT. PATNA. PUNE. RAIPUR. RAJKOT. SURAT. VISAKHAPATNAM.

Published by BIS, New Delhi